Commonwealth of Massachusetts
Office of Consumer Affairs & Business Regulation
Division of Energy Resources

RENEWABLE ENERGY PORTFOLIO STANDARD ADVISORY RULING

FOR

BORALEX INC.'S TWO PROPOSED PROJECTS TO RETOOL BIOMASS GENERATION UNITS IN MAINE

June 17, 2004

1. Advisory Ruling Request by Boralex Inc.

Boralex Inc. has requested that the Massachusetts Division of Energy Resources (hereafter, DOER or the Division) provide an Advisory Ruling with regard to the qualification under the Massachusetts Renewable Energy Portfolio Standard (RPS) of two proposed projects to retool old biomass Generation Units in Stratton and Livermore Falls, Maine.[1] This document is DOER's response to that request.

The RPS regulations, at 225 CMR 14.06(5),[2] provide an opportunity for a Generation Unit owner or developer "to request an advisory ruling from the Division to determine whether a Generation Unit would qualify as a New Renewable Generation Unit."[3]

2. Description of the Proposed Boralex Projects

The request from Boralex concerns a proposal to retool one or the other of two existing biomass Generation Units in Maine to meet the "low-emissions, advanced biomass power conversion technologies" criteria of the regulations at 14.05(1)(a)6. The two plants are Boralex Stratton ("Stratton") and Boralex Livermore Falls ("Livermore"), which were commissioned in 1989 and 1992 respectively, and both of which currently use stoker combustion technology. Pursuant to DOER's recent interpretation of its RPS regulations, if a retooled unit is successful in meeting those requirements, then DOER would deem it qualified as a New Renewable Generation Unit.[4]

Stratton is a 1989 spreader stoker boiler and steam turbine with a capacity of 50 MW gross, 45 MW net. Three-quarters of its fuel supply consists of lumber mill residues and whole tree chips, one-quarter of woody debris from C&D sources. The proposed project would entail removing the combustion portion of the boiler and replacing it with a bubbling fluidized bed or an internally circulating fluidized bed combustion unit.[5]

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[1] The Boralex Stratton request was provided as a memo to Dwayne Breger at DOER, dated November 11, 2003 (received 11/24/04), hereafter referenced as the 11/11/03 memo. Boralex requested the addition of its Livermore Falls plant to the Advisory Ruling in a memo to Howard Bernstein dated March 11, 2004, with details on Livermore provided in a memo dated March 24, 2004 (received 3/15/04 at DOER's new address), hereafter referenced as the 3/11/04 and 3/24/04 memos. Additional information was received in email messages from Boralex on May 10 and May 14, 2004, hereafter referenced as the 5/10/04 and 5/14/04 emails.

[2] Hereafter, all references to the RPS regulations will be to sections of 225 CMR 14.00.

[3] More information about Advisory Rulings for MA RPS is at http://www.mass.gov/doer/rps/advisory.htm.

[4] See DOER's *Guideline on the MA RPS Eligibility of Generation Units That Re-tool with Low Emission, Advanced Biomass Technologies*, dated April 16, 2004, and accessible at http://www.mass.gov/doer/rps/advbio.htm. Under the *Guideline*, the Vintage Waiver provisions at 14.05(2) cannot apply to units that use stoker combustion because a Vintage Generation Unit must meet all of the relevant requirements of 14.05(1)(a), which for a biomass unit categorically excludes the use of stoker combustion.

[5] Boralex 11/11/03 memo and 5/10/04 email.

Livermore is a 1992 spreader stoker boiler and steam turbine with a capacity of 39.6 MW gross, 35 MW net. Its fuel supply is about evenly divided between (a) lumber mill residues and whole tree chips, and (b) woody debris from C&D sources. The proposed project would entail removing the combustion portion of the boiler and replacing it with a "staged gasifier" that uses the same equipment as a bubbling fluidized bed unit like Boralex is considering for Stratton, but with a different staging of air inflow.[6]

This Advisory Ruling will address the proposed projects' fuels, technologies, and air emissions.

3. Qualification of the Fuel as Eligible Biomass Fuels

Both units burn woody debris from forestry and mill operations. In addition, each unit burns "wood fuels derived from Construction and Demolition (C&D) debris under a [Maine] Solid Waste Beneficial Use Fuel Substitution license."[7] DOER considers both types of fuels to fall within the definition of Eligible Biomass Fuel in the RPS regulations at 14.02.

DOER's position with regard to C&D wood debris was stated in its "Summary of Public Comments and Agency Responses" dated February 6, 2002, and in a letter from the Massachusetts Department of Environmental Protection (DEP) to DOER dated January 8, 2002.[8] As stated in that letter, C&D wood debris, which might include some "wood containing paints, stains, coatings or preservatives . . . can properly be considered as an eligible biomass fuel . . . as one type of 'organic refuse-derived fuel that is collected and managed separately from municipal solid waste.'" In addition, DOER has found C&D waste to be eligible in an earlier Advisory Ruling for EcoPower's proposed biomass Generation Unit in Massachusetts.[9]

4. Discussion of the Proposed Biomass Technology

The RPS regulations at 14.05(1)(a)6 provide that the qualification of biomass generation units is limited to "low emission, advanced biomass power conversion technologies using an Eligible Biomass Fuel." These criteria are designed to insure that the RPS provides incentives for older, dirtier technologies to be replaced by cleaner and more efficient technologies. DOER also believes that biomass technologies should improve over time in response to the incentives created by the RPS, added to the other regulatory and market forces responsible for continued technological progress in the electricity generation sector generally.

Boralex is considering fluidized bed (FB) technologies from Energy Products of Idaho, a firm that specializes in fluidized bed technologies applicable to a wide range of biomass fuels. For reasons of differing boiler configuration, Boralex is considering for its Stratton plant bubbling FB or internally circulating FB systems, but a staged gasifier bubbling FB system for Livermore. The latter system is better suited to the more constrained space within the Livermore plant.[10]

Although already in commercial use for biomass applications for more than twenty years, fluidized bed technology is relatively young and still undergoing significant innovation and

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[6] Boralex 3/24/04 memo and 5/10/05 email.

[7] See footnotes 5 and 6.

[8] DOER's February 6, 2002 "Summary of Public Comments and Agency Responses" (see item 1.E on page six) and the DEP's January 8, 2002 letter, to which said item 1.E makes reference, can be accessed under the Public Comment Documents section near the top of this web page: http://www.state.ma.us/doer/rps/delproc.htm.

[9] The EcoPower Advisory Ruling can be accessed via a link at http://www.mass.gov/doer/rps/advisory.htm.

[10] See footnote 6.

improvement with regard to technical efficiency, cost, and emissions. In two previous Advisory Rulings, for the PSNH's proposed re-tooling and repowering of one unit of its Schiller Station in New Hampshire and for EcoPower's proposed new unit in Massachusetts, DOER has determined that current FB technology represents an improvement over the early generation FB technology of the two 1986 Indeck boilers in Maine, and that the improved technology proposed for those projects meets the "advanced technology" criterion of the RPS regulations.[11] Consistent with those determinations and with the information provided by Boralex, DOER finds that the fluidized bed technologies proposed for the two Boralex plants also qualify as "advanced."

5. Discussion of the Project's Air Emissions

A generation unit using an eligible biomass fuel and advanced technology must meet the criterion of "low emissions" in order to qualify a New Renewable Generation Unit for the RPS, per the regulations at 14.05(1)(a)6. This criterion does not set specific emission targets. Rather, the threshold for eligibility is expected to become more stringent as biomass energy conversion and emission control technologies improve. In addition, that threshold might differ among fuels, technologies, and project scale – as determined by the MA DEP. Under the RPS regulations at 14.05(1)(a)6.a, a generator must receive a valid air permit from its appropriate state air quality regulatory agency to qualify as an eligible biomass generator. The same subsection also provides that the project "must . . . demonstrate to the satisfaction of the Division that its emission rates are consistent with emission rates for comparable biomass units as prescribed by the Massachusetts Department of Environmental Protection."[12]

Boralex has taken a different approach to the question of project emissions than other developers or owners in previous requests for Advisory Rulings. Instead of providing projected or expected or guaranteed emission rates, Boralex has simply stated the following:

> As part of the conversion project, Boralex Stratton Energy will install emission control technologies, including combustion and post-combustion controls, as have been approved on similar installations through the BACT assessment process. This will include technologies to reduce the emissions of NOx to levels found acceptable by Maine DEP, Massachusetts DEP and the DOER.[13]

Boralex has taken the same approach for Livermore, although it also points out for Livermore that the gasification process itself is expected to reduce both NOx and CO emissions.[14]

DOER's response to this approach must be to state that, in order to qualify as using a "low-emission" technology, the plant must, quoting the RPS regulations at 14.05(1)(a)6.a, "demonstrate to the satisfaction of the Division that its emission rates are consistent with emission rates for comparable biomass units as prescribed by the Massachusetts Department of Environmental Protection." Thus, the burden of demonstration and the risk are borne by Boralex, and DOER advises the company to stay in touch with the DEPs of both Maine and Massachusetts, as well as to monitor Advisory Rulings and Statements of Qualification at

[11] The Schiller and EcoPower documents can be accessed via links at http://www.mass.gov/doer/rps/advisory.htm. The Indeck plants are already qualified for RPS under the Vintage Waiver provision at 14.05(2)

[12] If the air quality regulations applicable in the jurisdiction where the unit is located do not require an air permit, then the unit must satisfy the requirements of the RPS regulations at 14.05(1)(a)6.c. This does not apply here.

[13] Boralex 11/11/03 memo.

[14] Boralex 5/14/04 email and 3/24/04 memo.

DOER's RPS web page.[15] In addition, DOER is likely to include emissions monitoring and reporting requirements as conditions in the Statement of Qualification for any non-Massachusetts biomass unit.

6. Summary of Ruling

DOER has found Boralex's proposed biomass retooling projects, as currently described, to fall within the eligibility criteria for biomass-fueled New Renewable Generation Units provided in the RPS regulations at 14.05(1)(a)6. The following summarizes this finding, and it also notes several key issues and requirements for Boralex to consider in its project planning. In reviewing an eventual Statement of Qualification Application for either or both of the units, DOER will also consider these issues and requirements.

1. DOER finds the proposed fuels to be consistent with the definition of Eligible Biomass Fuels in the RPS regulations. The proposed fuel stream will consist of whole tree chips, lumber mill woody debris, and C&D wood under Solid Waste Beneficial Use Fuel Substitution licenses.

2. DOER finds that, pending details to be submitted with a Statement of Qualification Application, any of the three fluidized bed technologies under consideration (bubbling, internally circulating, and staged gasification) would qualify as advanced biomass power conversion technologies. This finding is consistent with the findings for the fluidized bed technologies in two other recent Advisory Rulings.

3. DOER will determine that one or the other (or both) of the units qualifies as a low emission unit if, and only if, Boralex can "demonstrate to the satisfaction of the Division that its emission rates are consistent with emission rates for comparable biomass units as prescribed by the Massachusetts Department of Environmental Protection," in addition to obtaining a Valid Air Permit from the Maine DEP. Therefore, DOER advises Boralex to maintain contact with the MA DEP, in addition to meeting the requirements of the ME DEP. DOER also advises Boralex to monitor DOER Advisory Rulings and other MA RPS decisions, as well as MA DEP air permits, subsequent to this Advisory Ruling.

4. Boralex should note that, while DOER may grant a Statement of Qualification for the proposed Generation Unit, the RPS qualification of the plant always would be contingent on Boralex's obtaining any required ME DEP permit(s) for the proposed retooling and on its operating the plant in compliance both with those permits and with DOER's RPS regulations, including the conditions of the plant's Statement of Qualification. Boralex should expect emissions monitoring and reporting requirements to be included among those conditions.

5. Finally, Boralex should note that, once DOER grants a Statement of Qualification, further advances in "low-emission, biomass power conversion technologies" would have no effect on the plant's MA RPS qualification.

[15] http://www.mass.gov/doer/rps/.